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A Key to Pea Varieties[1]

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Seedsmen, seed growers, official inspectors, and canners frequently need assistance in the identification of pea varieties. With large acreages of pea seed being grown under Government contract for lend-lease or allied uses and to meet expanded domestic demand there is more than the usual need for a simple, practical key, or similar device, to assist in identifying many of the varieties that are not widely known in the United States. Even apparently minor deviations from the accepted standard for a variety may be of great importance to the canner, freezer, inspector, or seedsman. Trueness to type, uniformity, and identity of a stock or a field of peas are of major interest to those who work with peas.

The key herein is presented as a result of observations made since 1927 on a wide range of varieties and strains of garden and canning peas. Of the 73 varieties included, only about a dozen are of great importance from the standpoint of acreage produced in the United States for consumption in this country.

EXPLANATION OF TERMS USED IN THE KEY

Node of first bloom.—The most important feature of this key is perhaps the use of node of first bloom to show comparative earliness of varieties. Within a pea-growing area date of bloom may mean very little in deciding whether a variety is early or late, since the varieties being compared may have been planted on different dates. Frequently farmers who are growing the peas do not remember planting dates or are confused as to which variety was seeded first.

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[1] The work reported herein was partly performed at the U. S. Regional Vegetable Breeding Laboratory, Charleston, S. C., supported by an allotment from the Special Research Fund authorized by title I of the Bankhead-Jones Act of June 29, 1935.

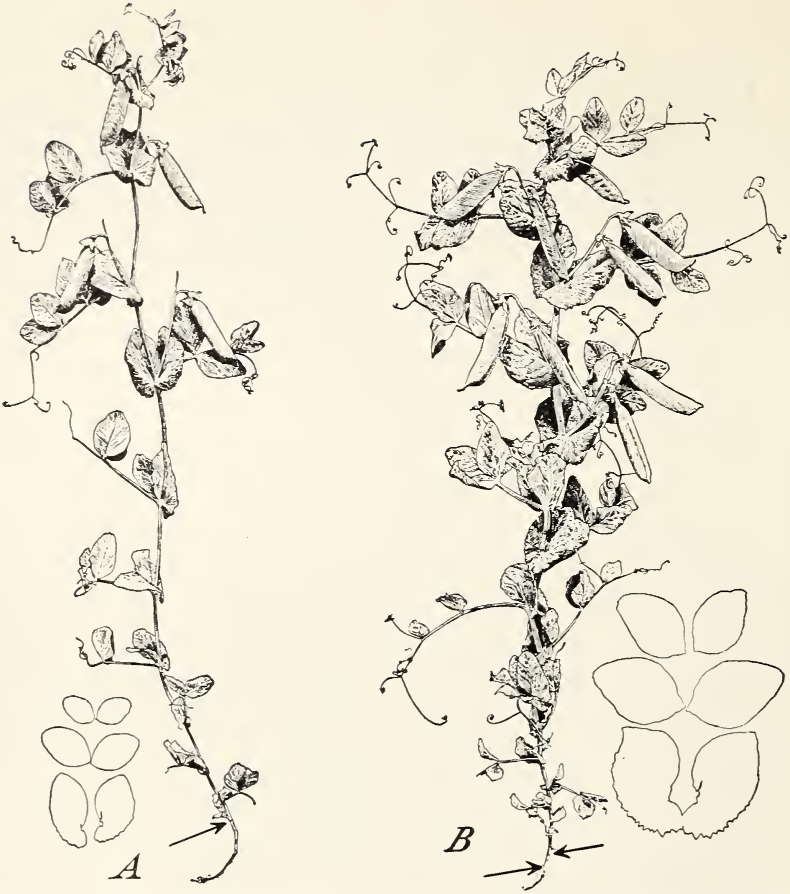


Figure 1.—*A*, Alaska, showing first pod produced at eighth node. *B*, Perfection, showing first pods produced at fourteenth node. Arrows indicate first node on Alaska and first and second nodes on Perfection. ×¼.

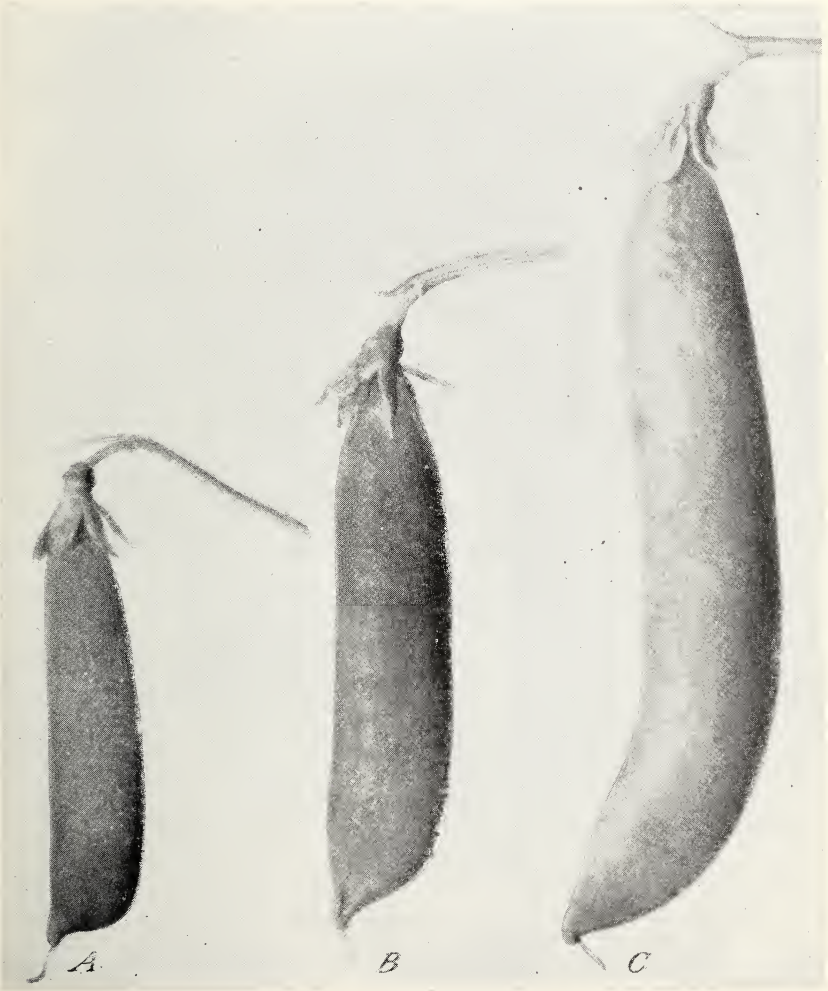
Between pea-growing districts there may be even more striking differences; for instance, in the Imperial Valley, Calif., the fall crop of Progress peas may be ready for harvest within 55 days of seeding while in the Sacramento area the spring crop of the same variety, which is planted in January, may require 120 days.

Counting nodes requires some experience before it can be satisfactorily done. Ordinarily two nodes occur below ground, but to make sure it may be necessary to pull up the plant or to dig soil away from the base. Profusely branched or injured plants should not be selected, since it is difficult to determine the main axis. Side branches may show considerable variation in apparent node of first bloom from that of the main portion of the plant.

In general, canning varieties show less variation in node of first bloom than market-garden varieties do, and varieties beginning to bloom at the eighth to fourteenth node show much less variation than those beginning to bloom at the fifteenth to twenty-fourth node. Seasonal and weather conditions influence node of first bloom slightly. Frost or very hot weather may cause some blossoms to slough off. When this occurs, care should be used in node counting to make sure that the dropped blossom nodes are included in the node count. Many varieties are not pure lines; this condition may also result in variation in node of blooming. Figure 1 shows node of first bloom for two varieties.

Size of pod.—Size of pod is an arbitrary, nonobjective item based on the comparative concept that Alaska pods are small, Perfection pods medium size, and Progress pods large (fig. 2). All sizes are

FIGURE 2.—Pods of Alaska, or Surprise, (*A*), Perfection (*B*), and Progress (*C*). Note that the first two pods have rather abruptly rounded ends (blunt), while the third is less abruptly rounded (pointed).



comparative on this basis. Growing conditions influence pod sizes, including breadths, greatly. The varieties must be grown under comparable conditions for breadth descriptions to have precise meaning.

Blunt vs. pointed pods.—Alaska and Perfection have blunt-ended pods with variable tendencies toward rounding off, while Progress has a definitely pointed pod. The small projecting tip is disregarded in this key, but it does vary somewhat in shape and size with variety (fig. 2).

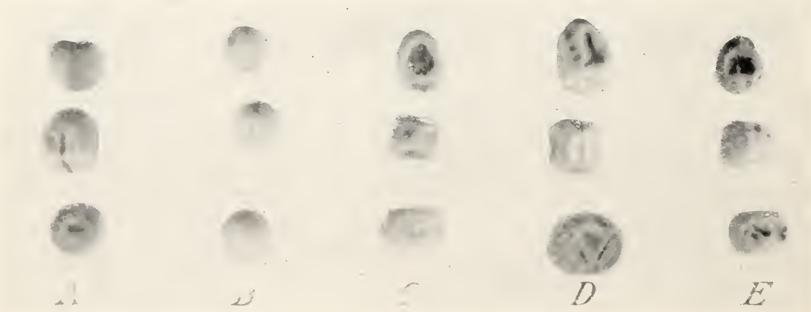
Foliage color.—Foliage color varies with fertilizer, moisture, and temperature, but on a comparative basis it is usually possible to separate varieties with light-green foliage from those with medium- or dark-green. Marbling of the foliage has some bearing on the evaluation of greenness and, if finer distinctions are considered, has a key value of its own. For instance, Surprise and Alaska may be distinguished before blooming time by the differences in marbling intensity.

Smooth vs. wrinkled seeds.—No attempt has been made to distinguish between smooth and dimpled seeds (fig. 3). Genetically they are different, but growing conditions sometimes add a nongenetic dimple to smooth seeds. Smooth or dimpled seeds may be readily distinguished from wrinkled seeds in the green pods long before any wrinkling can be expected to occur, merely by noting the relative sweetness of chewed samples; the wrinkled-seed varieties are much sweeter.

Seed color.—Pea seeds normally occur in three colors: Green, cream and green, and yellow. The cream-and-green seed appears to be in some cases a genetically green seed which fades rather easily; some seeds appear entirely cream. Some experience under field conditions will enable one to distinguish the yellow seeds from the other two groups during canning or market stages, since the seeds that will be yellow at maturity early develop a greater intensity of yellow in the immature seeds than do the varieties with green or cream-and-green seeds.

Tall and dwarf vines.—Peas that will be tall with straight internodes can usually be distinguished from short, sturdy varieties with zigzag

FIGURE 3.—One dimpled-, one smooth-, and three wrinkled-seed varieties: *A*, Alaska; *B*, Creole; *C*, Perfection; *D*, Progress; and *E*, Mardelah. Top row shows end view, center row ventral view, and bottom row side view. ×1.



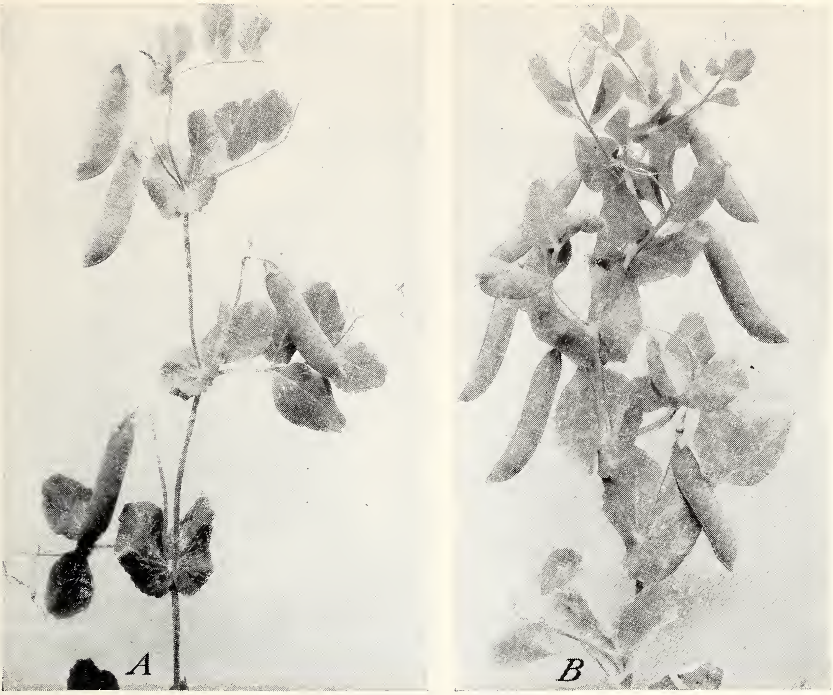


FIGURE 4.—*A*, Gradus, showing straight internodes of a tall variety. *B*, Hundredfold (Laxtonian), showing zigzag internodes of a dwarf variety.

internodes by the end of the first week of growth, since the former will be taller by that time (fig. 4).

Season.—The two categories early and midseason are all that are necessary for peas grown in the United States. England produces some late varieties, but climatic conditions here are apparently not satisfactory for them.

Resistance or susceptibility.—The resistance or susceptibility listed is to the wilt organism (*Fusarium oxysporum* f. *pisi* (Lindf.) Sny. and Han., or *F. orthoceras* Appl. and Wr. var. *pisi* Lindf.) (fig. 5, p. 10).

The key is always nondiagnostic for wilt resistance or susceptibility if the peas are growing on wilt-free soil. In many places in Washington, Maryland, and Wisconsin and in some places in other States wilt-resistant varieties must be used to avoid crop failures. The listing of wilt resistance is of value to many wishing to use the key, since without taking wilt resistance into consideration it may be extremely difficult to distinguish some varieties such as Surprise from Mardelah, for instance.

Key pattern.—In the key the A series of letters refer to the earliness of the varieties, the B series to vine characteristics, the C series to seed characteristics, the D series to pod size, the E series to pod shape, and the F series to foliage color. Growers and others can use these series to code the varieties in the field. For example, Extra Early would be coded as A–B–CC–D–E–F and Kay as AA–B–CCC–D–E–FF.

KEY TO AMERICAN VARIETIES OF GARDEN AND CANNING PEAS

	Wilt reaction	*Node of first bloom*	*Variety*
A. Early, beginning to bloom at the eighth to the twelfth node.			
B. Vines tall and weak (internodes straight).			
C. Seeds smooth or dimpled, green.			
D. Pods small.			
E. Pods blunt.			
F. Foliage light green	Susceptible	8 or 9	Alaska.
	Resistant	8 or 9	Alaska (various wilt-resistant strains).
	Susceptible	8 or 9	Winner.[1]
DD. Pods of medium size.			
E. Pods blunt.			
FF. Foliage medium to dark green	Resistant or susceptible	9 or 10	Ameer (Claudit).
EE. Pods pointed.			
FF. Foliage medium to dark green	Susceptible	9 or 10	Bountiful.
CC. Seeds smooth or dimpled, yellow.			
D. Pods small.			
E. Pods blunt.			
F. Foliage light green	Resistant or susceptible	8 or 9	Extra Early.
	Susceptible	9 or 10	First and Best.
EE. Pods pointed.			
FF. Foliage medium to dark green	Susceptible or resistant	10	Market Surprise.
CCC. Seeds wrinkled, green or cream and green.			
D. Pods small.			
E. Pods blunt.			
F. Foliage light green	Susceptible	8 or 9	Surprise.
	Resistant	8 or 9	Peerless.[2]
	do	8 or 9	Wisconsin Early Sweet.
	do	8 or 9	Mardelah.
	do	8 or 9	Resistant Surprise.
	do	9 or 10	Early Harvest.
DD. Pods of medium size.			
E. Pods blunt.			
FF. Foliage medium to dark green	Susceptible	9 or 10	Thomas Laxton.
	Resistant	9 or 10	Glacier.

EE. Pods pointed.			
F. Foliage light green	Susceptible	10 or 11	Gradus.
	do	11 or 12	Improved Gradus.
FF. Foliage medium to dark green	Resistant or susceptible	9 or 10	World Record.
	do	9 or 10	Stella (Easy Money).
BB. Vines short and sturdy (internodes zigzag).			
C. Seeds smooth or dimpled, green.			
DDD. Pods large.			
EE. Pods pointed.			
F. Foliage light green	Susceptible		Superb.[3]
CCC. Seeds wrinkled, green or cream and green.			
D. Pods small.			
E. Pods blunt.			
F. Foliage light green	do	10	Nott Excelsior.
FF. Foliage medium to dark green	do	9	American Wonder.
	do	10	Little Marvel.
DDD. Pods large.			
E. Pods blunt.			
FF. Foliage medium to dark green	Resistant	12	Morse Market.
EE. Pods pointed.			
F. Foliage light green	Susceptible	9	Peter Pan.
	do	10	Laxtonian (old type).
FF. Foliage medium to dark green	do	10	Pioneer.[4]
	do	10	Hundredfold.[5]
	do	10 or 11	Multifold.[5]
	do	9	Progress.[5]
	do	12	President Wilson.[6]

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[1] Seeds smaller than those of Alaska; the size difference is approximately the same as that between Alaska and Creole seeds (fig. 3).

[2] Pods curved.

[3] Pods dark green, exceptional for a variety with light-green foliage.

[4] Pods slender.

[5] Pods medium wide.

[6] Pods thick-walled, inflated. Pod-wall thickness varies with temperature; Giant Stride should be kept in mind as a thick-walled type.

KEY TO AMERICAN VARIETIES OF GARDEN AND CANNING PEAS—Continued

	Wilt reaction	*Node of first bloom*	*Variety*
AA. Midseason, beginning to bloom at the thirteenth to the twenty-fourth node.			
B. Vines tall and weak (internodes straight).			
CC. Seeds smooth or dimpled, yellow.			
D. Pods small.			
E. Pods blunt.			
FF. Foliage medium to dark green	Unknown	13 to 21	Creole.
CCC. Seeds wrinkled, green or cream and green.[7]			
D. Pods small.			
E. Pods blunt.			
FF. Foliage medium to dark green	Resistant	13	Kay.
	Susceptible	13	Chief.
	Resistant	13	Teton.
	do	14 or 15	Green Admiral.
	do	14	Climax.
	do	16 to 18	Yellow Admiral.[7]
DDD. Pods large.			
EE. Pods pointed.			
F. Foliage light green	do	14 to 16	Tall Telephone.
FF. Foliage medium to dark green	do	13	Early Alderman.
	do	14 to 16	Alderman.
	do	14	Kent Alderman.[8]
	do	14 to 16	VC.[8]
	do	14 to 16	Quite Content.[8]
BB. Vines short and sturdy (internodes zigzag).			
C. Seeds smooth or dimpled, green.			
D. Pods small.			
E. Pods blunt.			
FF. Foliage medium to dark green	Resistant	18 to 24	Bluebell.
DDD. Pods large.			
E. Pods blunt.			
FF. Foliage medium to dark green	do	14 to 16	Pride of the Market.
CC. Seeds smooth or dimpled, yellow.			
D. Pods small.			
E. Pods blunt.			
FF. Foliage medium to dark green	do	18 to 24	Belle of Georgia.

CCC. Seeds wrinkled, green or cream and green.			
D. Pods small.			
E. Pods blunt.			
FF. Foliage medium to dark green	Resistant or susceptible	13	ABUNDANCE.
	Resistant	14	HORAL.
DD. Pods of medium size.			
E. Pods blunt.			
F. Foliage light green	do	13	CANNER KING.
	Susceptible	14	ONWARD.
FF. Foliage medium to dark green	do	13	EARLY PERFECTION.
	Resistant	13	EARLY PERFECTAH.
	do	13	PRIDE.
	Susceptible or resistant	14	PERFECTION (Advancer).
	Resistant	14	MERIT.
	do	14	SHASTA.
	do	15	PROFUSION.[9]
	Susceptible	16	HORSFORD.
	do	16	GALLATAN (Late Perfection).
	Resistant	18	MAJOR.[9]
	do	16 to 18	PRINCE OF WALES.[9]
DDD. Pods large.			
EE. Pods pointed.			
F. Foliage light green	Resistant or susceptible	14	DAISY (Dwarf Telephone).
	Resistant	13 to 15	SENATOR.[2]
	do	14	PHENOMENON.[6]
FF. Foliage medium to dark green	do	15	DWARF ALDERMAN.
	do	16	STRATAGEM.
	do	13	GILBO.[6]
	do	14	GIANT STRIDE.[6]
	do	14	No. 40.[6]
	do	14	STRIDAH.[6]
	do	15	ICER (No. 95).[6]

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[7] One exception, Yellow Admiral, has yellow seed.

[8] Pods inflated. A pea pod that tends to be circular instead of oval in cross section and possesses a sufficiently thick, strong pod to stand away from the seeds is described as inflated.

[9] Seeds large.

See also footnotes on p. 7.

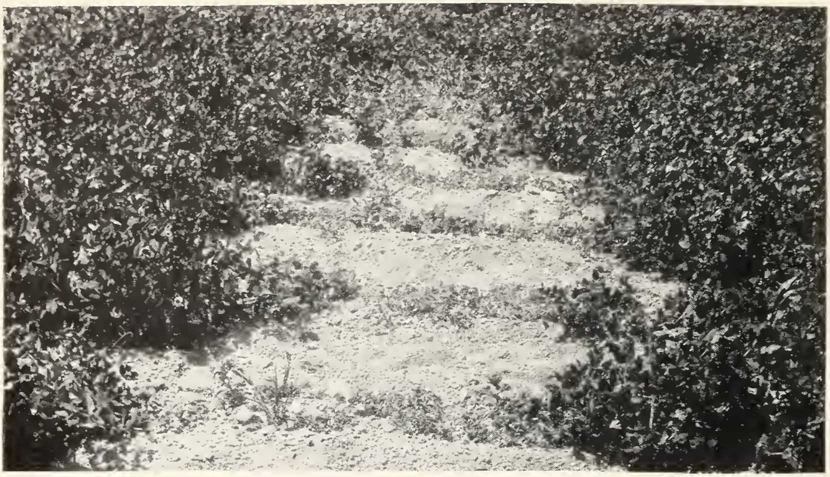

Figure 5.—Wilt-susceptible (center) and wilt-resistant varieties grown on soil infested with the wilt organism.

COMMENTS ON VARIETIES INCLUDED IN THE KEY

Most of the work on this key was done before 1936. Since then most observations have been made under South Carolina conditions, which are unfavorable for all except very early varieties. Some of the recently introduced varieties have not been extensively studied but have been observed in trial grounds or field plantings in western seed-growing areas. Node counts were not available for a few varieties, but these have been assigned positions in the key on the basis of their dates of bloom in comparison with those of similar varieties with known node numbers.

Since the development of wilt-resistant Alaska strains, wilt-susceptible Alaska has largely become of historical interest. In response to orders for stocks of wilt-susceptible Alaska in the fall of 1941 various seedsmen stated that they are no longer growing this item. At one time Winner was an important pea in the Alaska group, but it has not held its position and is now a very minor variety. HF 30 Alaska is a rogue type beginning to bloom at the ninth to the eleventh node. It is productive but is losing in popularity.

In 1927 all stocks of Ameer or Claudit worked with had blunt pods, but in 1942 most seedsmen described the pods of their stocks as pointed. As now sold the pointed-pod Bountiful may be furnished for all three varieties; Ameer or Claudit with blunt pods is seldom seen.

Extra Early and First and Best as now sold are probably not distinct varieties. They are much more important for dry, edible peas than for market-garden use.

Market Surprise, once very popular, is now disappearing from trade.

Surprise and closely related varieties are much confused. Surprise lacks vigor, and many of the wilt-resistant substitutes offered for it are much more vigorous. Many strains delivered as Surprise are evidently wilt-resistant substitutes. Peerless, in the Surprise group, is of historic interest only. Developed by the late Wilbur Brotherton, Jr., it was hardy and of high quality but never acceptable to canners, since the pod was not straight.

The excellent quality of Thomas Laxton and its good appearance when frozen have combined to give this pea and related similar varieties added importance during the last few years.

The quality of Superb has nothing to recommend it. It is believed that Superb is now losing some of its former popularity as a market variety.

Little Marvel has increased in popularity at the expense of Nott Excelsior and American Wonder.

Morse Market has excellent quality, but shippers of large-podded varieties are not enthusiastic about blunt pods.

In the Peter Pan to Progress group only Hundredfold and Progress are important. The name "Laxtonian" retains some of its popularity, but as now sold it is Hundredfold; in a few cases Progress has been substituted for it.

President Wilson has lost popularity because of light yields under most conditions.

Creole is a French field pea of fair quality and considerable hardiness that is used for gardens in Louisiana and a few other places in the South. At Charleston, S. C., it is extremely variable in node of first bloom.

In the Admiral group Climax and Teton have tended to displace Kay and Green Admiral. Yellow Admiral is now rarely canned.

In the Alderman group true Tall Telephone with light-green foliage has disappeared, and Alderman is substituted for it. In the Pacific Northwest the inflated-pod types such as Kent Alderman, VC, and Quite Content are more popular than Alderman.

Bluebell is a field pea that has occasionally been canned. Similar types or pure lines are Blue Prussian and Idabell. Idabell tends to bloom more uniformly at the eighteenth node.

Pride of the Market and Belle of Georgia are hardy but not popular.

Abundance is a smaller podded, hardy strain of Perfection, higher in quality than Horal but not so productive. Both are of minor importance.

In the Perfection group there is a distinct tendency to sell wilt-resistant Perfection exclusively in preference to wilt-susceptible Perfection. Originally Perfection and Advancer were different, but they are now indistinguishable by any test applied.

Blunt-podded canning varieties blooming later than the fourteenth node have never been especially popular. Horsford is a good yielder under favorable conditions but lacks some of the quality of Perfection or Gallatin (Late Perfection). Horsford does not seem to be used for market-garden purposes.

Prince of Wales has been canned largely because of its large seeds of high quality. Walah is a strain of Prince of Wales with all cream-colored seed. The name "Green Giant" has been applied to many large-seeded varieties but especially to Prince of Wales. There is a Prince of Wales variety with straight internodes, but this is rarely grown in this country.

In the large-podded, midseason, dwarf group, the varieties with light-green pods (Daisy and Phenomenon) are now very little grown. Dark-podded Daisy as sold is Stratagem. Giant Stride and closely related strains now dominate this group, while Stratagem is becoming a minor variety.

Senator is of only minor importance.

SIMPLIFICATION OF THE VARIETAL SITUATION

As the seed-growing situation exists today most seedsmen are maintaining hundreds of seed stocks, while the bulk of their business comes from a dozen or so varieties. It is believed that benefits would accrue to seedsmen as well as to the seed-purchasing public if the number of varieties could be limited.

It is believed that the following strains carried as pure lines would take care of approximately 95 percent of all seed sales in this country.

Alaska, preferably a vigorous, wilt-resistant strain.
Bountiful, described as a large-podded Alaska, but with a pointed pod.
Extra Early or First and Best (not both).
Surprise of a wilt-resistant type.
Thomas Laxton or a similar strain.
Gradus or World Record (not both).
Little Marvel, a good pea for the home garden and for the market, and for canning in some places.
Hundredfold, the dominant second early-market variety.
Progress, the dominant first early-market variety.
Green Admiral, Climax, or Teton (not all three).
Alderman or Kent Alderman (not both).
Perfection, a wilt-resistant strain.
Prince of Wales or a related strain.
Giant Stride or a related strain.

This circular has been written with the needs of the wholesale trade in mind, but the simplification of the name situation should be of value to the retail trade as well. When a variety possesses several trade names the retailer could put a descriptive and explanatory label on his packages in which synonyms or names of closely related varieties would appear in somewhat smaller type. New names should be reserved for new varieties rather than applied to old varieties.

It is hoped that this key, by showing some of the relationships, may help in the work of simplification. A key of this type is as dynamic as the breeding situation that makes it possible. In order to keep it up-to-date, seedsmen and those interested are requested to furnish information from time to time or to make over the key to suit themselves.

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